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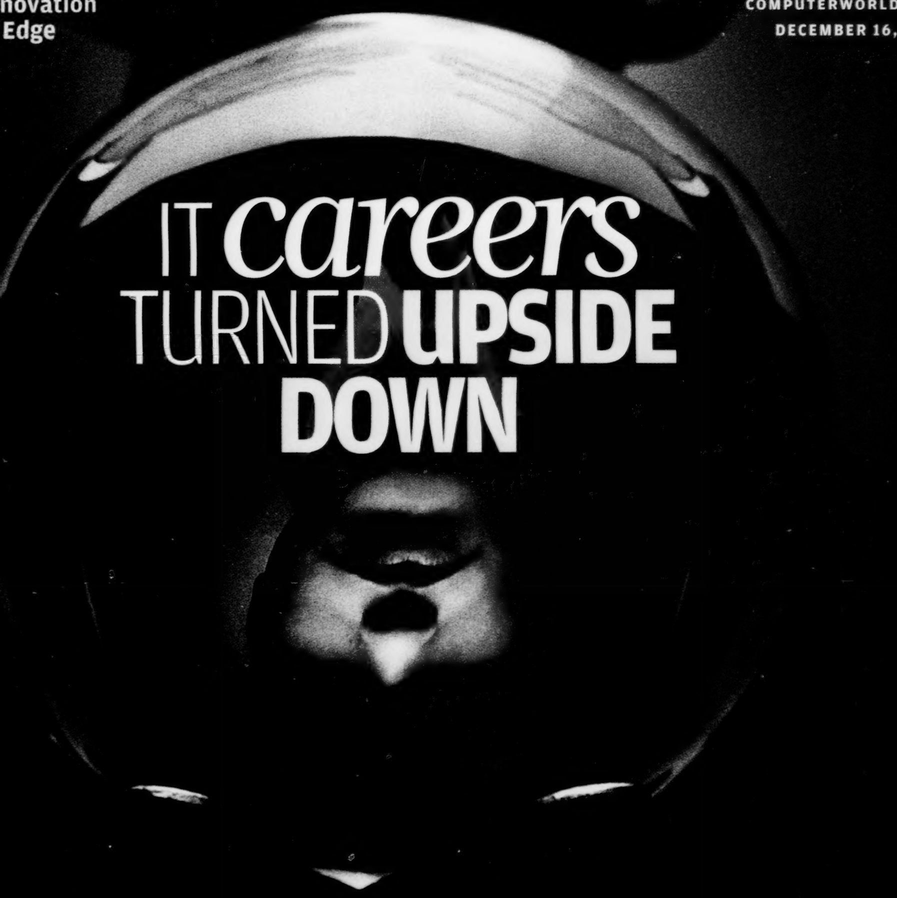

IT *careers* TURNED **UPSIDE DOWN**

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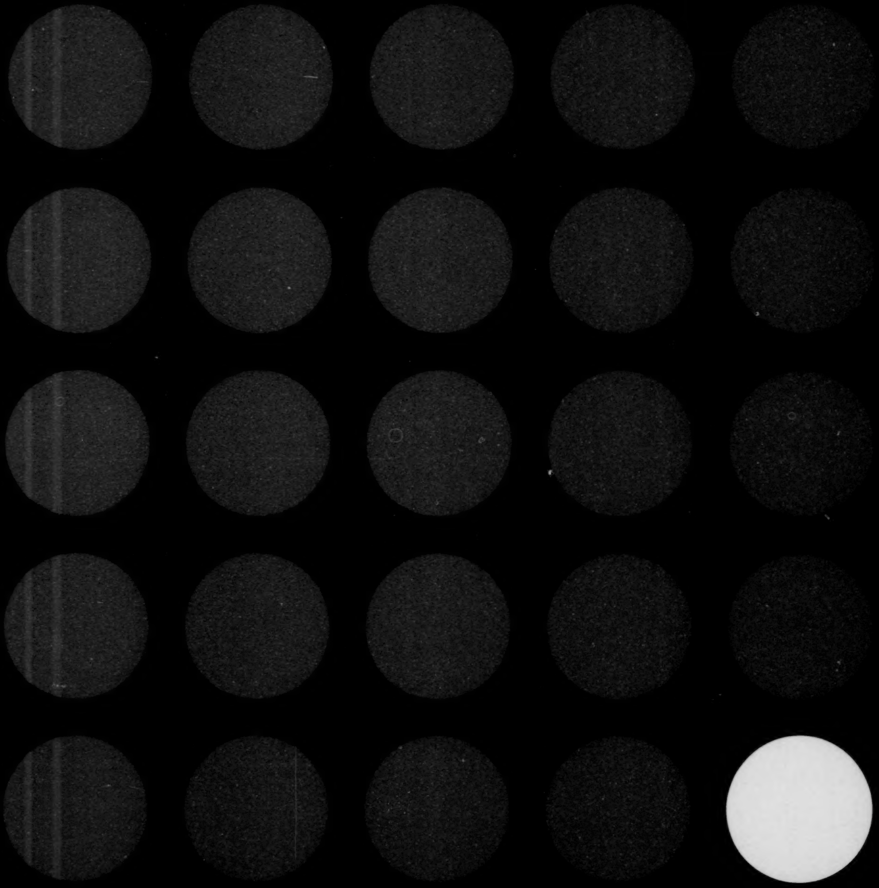

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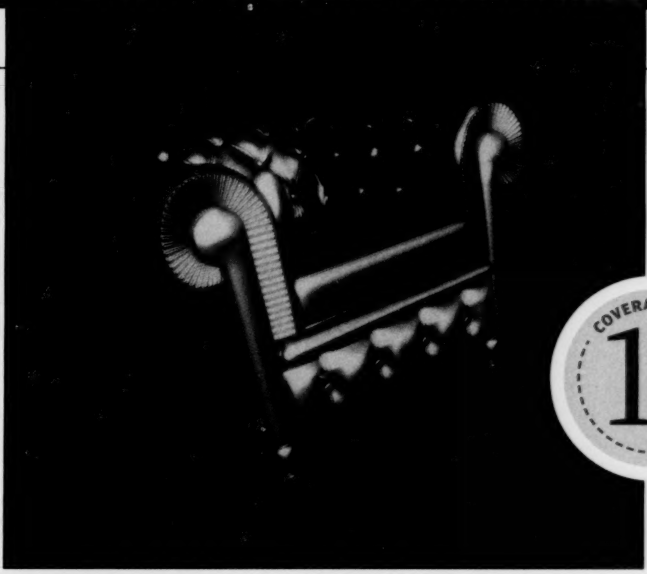
SPECIAL REPORT | IT CAREERS TURNED UPSIDE DOWN



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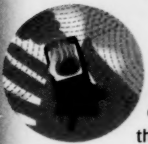

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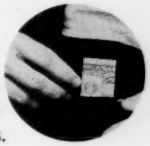

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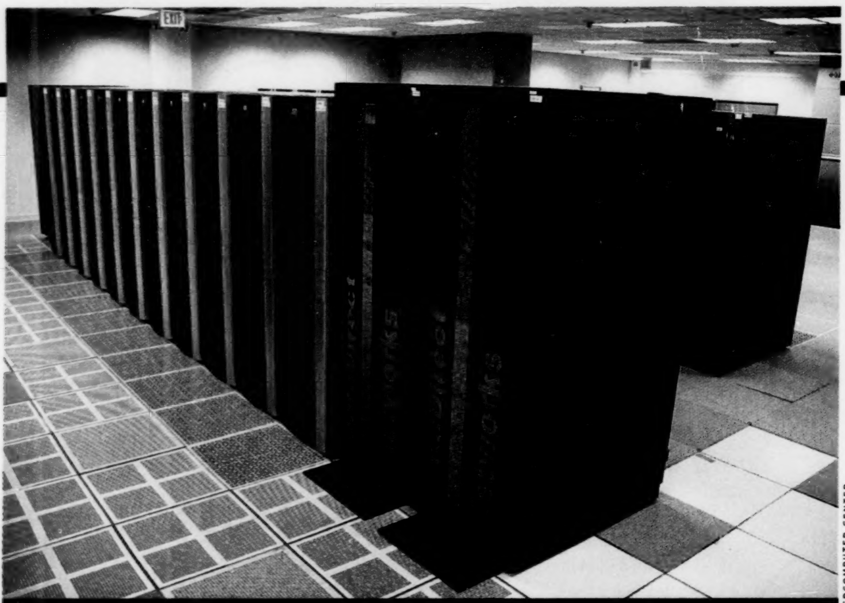

The Ohio Supercomputer Center plans to sell online apps that small businesses can run on its high-performance computer, pictured here.

OHIO SUPERCOMPUTER CENTER

SUPERCOMPUTING

App Store for HPC Software Tools Planned

A **BIG PROBLEM** with supercomputing is that the technology is out of the reach of the organizations that could benefit from it most. The Ohio Supercomputer Center (OSC) hopes to do something about that by opening an app store.

The goal is to help small business solve big problems using high-performance computing (HPC), said Alan Chalker, director of the OSC's new AweSim program, which is spearheading the app store effort.

For example, he said, a manufacturer designing a part to reduce drag on a tractor-trailer could use an app to run a simulation across 128 cores of the OSC's 8,500-core system. The cost would likely be about $200 to $500 to run the simulation and package the results in a report.

Testing an actual 18-wheeler in a wind tunnel could cost as much $100,000.

Due to open by the second quarter of next year, the store will initially offer one application and several tools that have been ported for the Web. The plan is to eventually spin off AweSim into a private company and populate the store with thousands of apps.

Chalker said AweSim has raised about $6.5 million from government and private groups, including Procter & Gamble.

Tom Lange, director of modeling and simulation in P&G's corporate R&D group, said he hopes the company's supply chain partners will use AweSim tools.

AweSim will use some open-source HPC tools in its apps, and it's working on agreements with major HPC software vendors to make parts of their tools available as apps.

– Patrick Thibodeau

PRIVACY

Microsoft Vows to Tell Users of NSA Requests for Data

Responding to concerns about government surveillance, Microsoft recently told its customers worldwide that it is committed to notifying them when it receives legal orders to turn over their data, and that it will fight in court any gag orders that prevent it from informing customers of such developments.

By the end of 2014, the company also plans to encrypt customers' information moving between its data centers. The company said it would use best-in-class cryptography.

Users in the U.S. and other countries have grown increasingly anxious about government surveillance in the wake of revelations by former U.S. National Security Agency contractor Edward Snowden that the NSA engages in dragnet surveillance of email, phone records and mobile location data of people in the U.S. and abroad.

In a blog post, Brad Smith, Microsoft's general counsel and executive vice president of legal and corporate affairs, said the company shares customers' concerns about government surveillance and is "taking steps to ensure governments use legal process rather than technological brute force to access customer data."

Microsoft is also working with other service providers to make sure customer data is protected, Smith said.

– JOHN RIBEIRO,
IDG NEWS SERVICE

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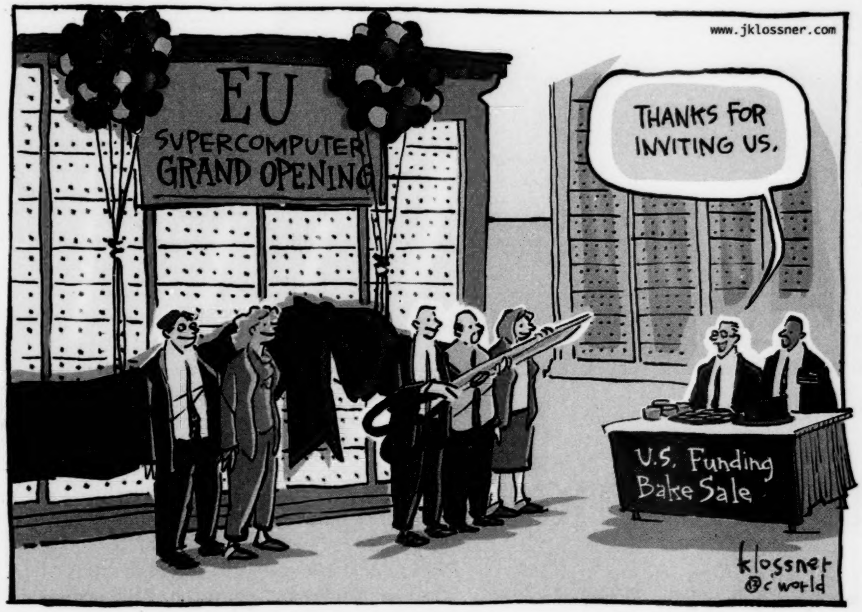
BETWEEN THE LINES
By John Klossner



Micro Burst

Global PC shipments are projected to decline by

10.1%

to 314 million in 2013.

MALWARE

Linux Worm Exploits Internet of Things

SECURITY EXPERTS are starting to raise red flags about the Internet of Things, warning that the number of systems that can be hacked and attacked will grow exponentially as the network of connected devices expands.

Security vendor Symantec has discovered a worm that targets a small subset of Internet of Things (IoT) devices, such as Linux-based home routers, set-top boxes, security cameras and industrial control systems, by exploiting an old PHP vulnerability that was patched last year.

The worm generates IP addresses randomly, sends out HTTP post requests and then spreads. No attacks have yet been found in the wild, Symantec reported.

More broadly, matters have been complicated by "vendors of devices with hidden operating systems and software who have configured their products without asking users," Symantec said. "Many users may not be aware that they are using vulnerable devices."

Security researchers do not discount the idea that the IoT will serve as an attack vector, but many say the worm Symantec found likely won't use it that way.

Ken Westin, a researcher at security vendor Tripwire, says the exploit targets PHP-CGI (Common Gateway Interface), which most Linux systems don't use.

That said, the worm does represent a "minimal" increase in the vulnerability of unpatched routers and embedded systems, Westin said in an email, adding, "It serves as a good reminder that there should always be a firewall between routers and the Internet."

Security expert Bruce Schneier didn't address Symantec's finding, but said he's concerned about the broader risks associated with the Internet of Things. In many cases, IoT-connected systems are using firmware that can be hard or impossible to patch.

Makers of the systems that comprise the IoT all use "very cheap stuff," Schneier said. "There is a big problem waiting to happen."

– Patrick Thibodeau

HARDWARE

Touchscreen Laptops Are A Tough Sell

Sales of touchscreen laptops are rising, but the devices aren't really catching on with consumers.

Touch-ready notebook PCs will account for about 11% of all laptops shipped this year, according to research firm NPD DisplaySearch. That's an improvement over 2012, but people still balk at the premium prices typical of such devices.

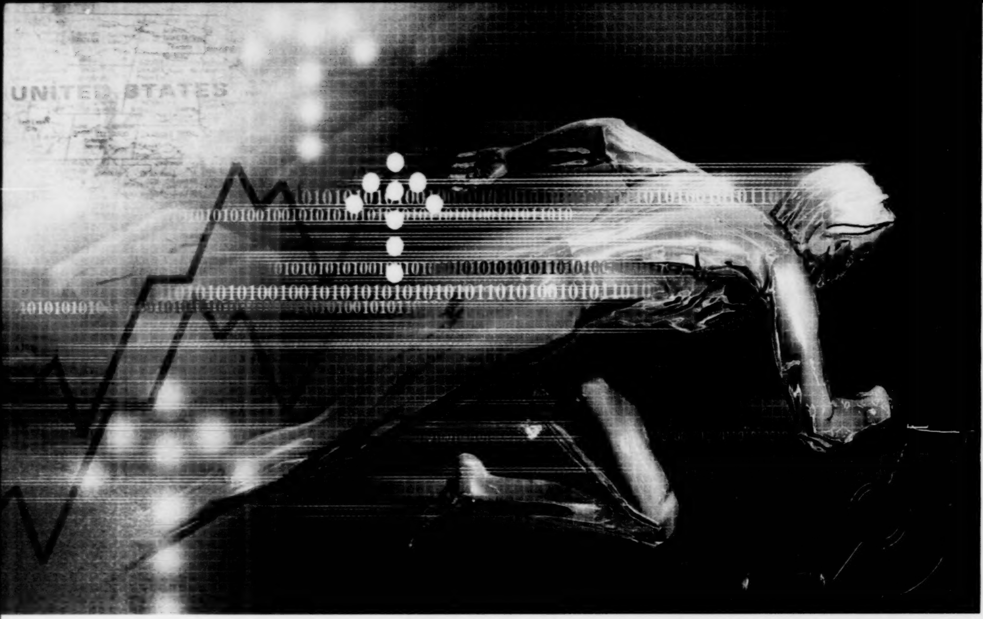
They think, "I shouldn't have to pay extra for touch; I get it free on my smartphone and tablet," said NPD DisplaySearch analyst Richard Shim. "And there are really no apps that are forcing or encouraging consumers to adopt touch."

Manufacturers will ship nearly 20 million touchscreen laptops in 2013, according to DisplaySearch. And shipments and penetration rates will climb through 2017, when DisplaySearch estimates that touchscreen models will account for almost 40% of all laptop shipments.

Microsoft's Windows 8 is not the reason people are buying touch notebooks, Shim said. "Touch penetration on Windows 8 is still relatively modest," he said.

Instead, he believes that people base their decisions on the physical designs of touch notebooks, which often have style flourishes that blocky laptops lack.

– GREGG KEIZER



NEWS ANALYSIS

U.S. Falling Behind In Exascale Race

Without funding or a firm deadline, the country may not build a next-generation supercomputer before Japan, the EU or China. By Patrick Thibodeau

THERE'S NO GUARANTEE that the U.S. will win the global race to build the next generation of supercomputers — exascale systems.

Those machines would be 1,000 times faster than today's 1-petaflop systems, running at least 1 million trillion calculations per second. Development costs would be massive.

Today, U.S. companies — Hewlett-Packard, IBM and Intel, in particular — dominate the global high-performance computing (HPC) market. In fact, HP and IBM together account for 72% of systems on the latest Top500 list, which ranks the world's most powerful supercomputers.

The lopsided U.S. market share doesn't sit well in other parts of the world. In some countries, researchers are busy building new chips, interconnects and other technologies in a push to beat the U.S. to exascale. The European Union, China and Japan are the major challengers to the U.S., which has yet to set a budget or target date for exascale development.

The EU has committed about $1.6 billion to exascale research and hopes to deliver a system, now in development, using ARM chips from Cambridge, England-based ARM Holdings by 2020.

"[The EU] wants to be able to build the exaflop system and not buy it from a provider," said Alex Ramirez, computer architecture research manager at the Barcelona Supercomputing Center and head of the effort to build the ARM-based exascale system.

China, whose 34-petaflop Tianhe-2 supercomputer holds the top ranking in the latest Top500 list, could also deliver an exascale computer by 2020. The country is expected to produce two 100-petaflop systems, one built entirely from China-made chips and interconnects, by as early as 2015.

"I think the Chinese are two years ahead of the U.S.," said IDC analyst Earl Joseph.

Kimihiko Hirao, director of Japan's Riken Advanced Institute for Computational Science, said that country also hopes to build an exascale system by 2020. "We are rather confident," said Hirao.

Jack Dongarra, a professor of computer science at the University of Tennessee and a key member of the team that compiles the Top500 list, said Japan will likely meet its goal. "When the Japanese put down a plan to deliver a machine, they deliver the machine," he said.

Dongarra is less confident about China's prospects. "They are not ahead in terms of software, they are not ahead in terms of applications," said Dongarra. However, he did note that, unlike the U.S., China is investing heavily in HPC initiatives.

There's a sense throughout the world that HPC development is at a critical juncture. New technologies are needed to build exascale systems. For example, DRAM, which has been used since the 1960s, is too slow and too expensive to support exascale. One possible successor to DRAM is phase-change memory, which delivers 100 times the performance of flash memory products.

Developing such technologies requires significant government investment, and that won't be forthcoming unless the U.S. overcomes congressional gridlock. Mixed messages from government officials are also problematic. For instance, the White House has recently placed more emphasis on big data than on supercomputers.

> I think the Chinese are **two years** ahead of the U.S.

Dongarra and others remain optimistic that Congress will ultimately fund exascale development. In the U.S. House, Rep. Randy Hultgren (R-Ill.) has been working to get funding passed, and has 18 co-sponsors from both parties. Similar efforts are underway in the Senate, he noted. ◆

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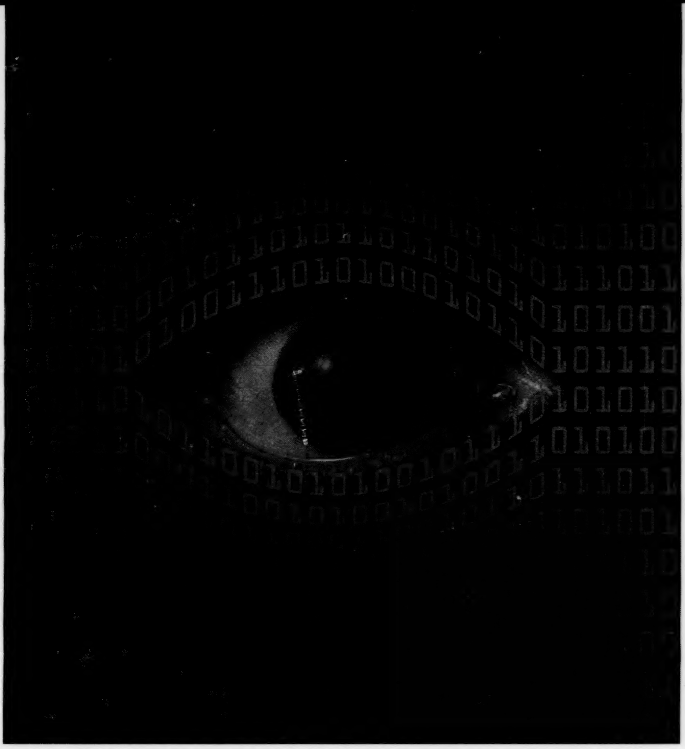

NEWS ANALYSIS

IT Moves to the Cloud Despite NSA Snooping

The benefits of cloud computing are too great to ignore, say IT execs – but they are wary of government surveillance. By Juan Carlos Perez

REVELATIONS about the U.S. government's massive cyberspying activities have spooked everyday citizens, rankled politicians and enraged privacy watchdogs. But IT leaders say that while they're concerned that NSA spies could gain access to their customers' personal data, they aren't panicking — yet.

Interviews with some 20 high-ranking IT executives in North America and Europe revealed that the alarming reports haven't prompted a rollback of plans to host applications and data in the cloud. Many of those interviewed acknowledged, however, that they're now more likely to closely review agreements with vendors, double-check best practices and tighten security controls.

"Government surveillance hasn't changed our opinion about cloud computing. The cloud model is attractive to us," said Kent Fuller, director of enterprise infrastructure services at BCBG Max Azria Group, which uses Microsoft's cloud-based Office 365 suite.

Michael Heim, global CIO at Whirlpool, said the NSA revelations haven't changed the appliance maker's plans to move about 30,000 employees from IBM Lotus Notes to the Google Apps cloud-based email and collaboration suite.

"The capabilities and economics around the cloud computing model are so compelling that when you artificially try to not take advantage of them, you impact your ability to compete, because others will take advantage of them," Heim said.

The NSA scandal does worry cloud vendors, who say current and prospective customers have voiced concerns. "It's not having a material impact. But it's certainly causing people to stop and then rethink decisions," said Rob Lloyd, president of development and sales at Cisco.

The level of security offered by cloud vendors ranges from minimal protection to safeguards that are stronger than those of on-site IT data centers, said Jos Creese, CIO of the Hampshire County Council in England.

"We need to be prudent as to who we select in cloud providers," said Brian Kelley, CIO of Portage County in Ohio."We certainly need to engage ourselves much more to know where our data is, how it is accessed and who can access it."

IDC analyst Scott Strawn warned CIOs to beware of vendors that claim they can completely shield data from the government. "Vendors have absolutely no ability to make those claims," he said. "The NSA has a lot of power to do what they do."

Some IT chiefs said they are more worried about insider threats from disgruntled employees or contractors like NSA whistle-blower Edward Snowden than they are about government snooping.

Alex Gorbachev, CTO of Pythian Group, a data management and consulting company in Ottawa, Ontario, said Snowden should serve as a reminder that CIOs must be careful when hiring IT staffers, because, for example, many email and database administrators have unfettered access to corporate mailboxes. ◆

Perez *is a reporter for the IDG News Service.* **Stephen Lawson, Chris Kanaracus, Joab Jackson** *and* **Mikael Ricknas** *of the IDG News Service contributed to this story.*

Government surveillance hasn't changed our opinion about cloud computing. The cloud model is attractive to us.

DIRECTOR OF ENTERPRISE INFRASTRUCTURE SERVICES, BCBG MAX AZRIA GROUP

THINKSTOCK

THE Grill

Michael Relich

This IT leader took the road less traveled to his dream job: chief operating officer.

What's your favorite tech toy? "My storage area network and Mac Mini. I can stream music and movies to every device in the house. I have about 1,000 albums."

What music do you like? "I don't like rap, but I have everything from opera to blues to reggae to classic rock to alternative to jazz."

If you weren't in IT, what would you do for work? "I'd probably be a lawyer. I like to argue."

Do you have any hobbies? Riding motorcycles.

What's on your reading list? *The Post-American World*, by Fareed Zakaria

Hometown: Hacienda Heights, Calif.

AS EXECUTIVE VICE PRESIDENT AND CIO *at Guess Inc., Michael Relich oversaw the retailer's global IT strategy and a worldwide IT staff of more than 100 people. His nine-year tenure in the position earned him a spot as one of four finalists for the MIT Sloan CIO Symposium's CIO Leadership Award for 2013. Relich's work also earned him a nod from Guess CEO and co-founder Paul Marciano, who in August named him the company's new COO. In announcing Relich's appointment, Marciano cited his strong operational skills, strategic vision and leadership in retail technology.*

Did your IT background prepare you for the COO job in ways that experience in other areas couldn't? The CIO job is a little bit of a barrier. I wanted to have this role, this was my ultimate aspiration, but it's such an untypical path that it seemed really difficult. But now that I've got the COO job, I think being CIO uniquely prepared me and it's a huge benefit. If you come in as a CFO, you understand the numbers. But business is getting more complex, and the CIO is putting in systems to solve problems. And how can you solve a problem if you don't understand what it is? I was part of the team that built the systems infrastructure, and I had a good grip on how the company works. If didn't have that experience, it would be difficult to take on this position.

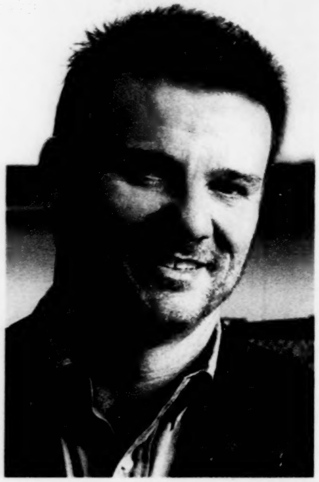

PHOTO COURTESY OF GUESS INC.

Were there disadvantages in moving from CIO to COO? A big part of the COO role is financial. Because the traditional path has been via the CFO route, people [might think I] lack the finance acumen. That's probably the disadvantage. But still, it's different. If you worked as a CFO, I can't compete with that. But I don't think CFOs can compete with me on the operations side.

Did you aspire to the COO job? I started out my career as a programmer, so I was pretty technical. I'd have managers come in and say, "Program this, program that," but I wanted to understand why I was doing a particular task. Nothing bothered me more than someone giving me a task without giving me context.

As a CIO, I was getting frustrated because a lot of times you were treated as if you didn't know the business, so people wouldn't be open to all the possibilities. As a CIO, I was highly respected, but you don't have that same pull. You're trying to convince people. As COO, I know the systems, I know how the process works, and it's amazing how that little title change can change people's perspective.

What does that say about the CIO role in business today? You can recommend solutions, but adoption still takes place on the business side. So you're still a salesperson. But as a COO, it's much easier to ensure adoption.

Is that the CIO's fault? It depends. You have two [types of] CIOs. You have some guys who are tech heads — they love the technology. They're going to use acronyms that confuse business people, and they're the last guys to get called into meetings. And you have CIOs who are more business-oriented. If you're more technically oriented, you need to change or become extinct.

So what makes a strong IT leader today? It's somebody who has a very good grasp of business, who understands the business problems, who makes partnerships with their team, with their colleagues, and who is also able to build a good team to actually implement their vision.

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How did you handle the transition to COO? I met with all of the business leaders, and because I had worked here so long, I had the relationships and that helped. I was able to sit down and speak with them and find out what their pain points and challenges were. And the reception I got was pretty good. It was, "You understand my problems."

Half the challenge is to say you really understand what the problems are, and the second half was to put together a road map on how to deal with their challenges.

Did you make any missteps that you'd advise others to try to avoid? I've only been in this job two months, so there haven't been any huge missteps. But being in IT, you have to get into detail, there's no way around it. Sometimes, I think, in the COO role you have to be a little more broad. [You have] to keep it at a higher level. And in projects in IT, you're dealing with one area. But in the COO job there's so much that has to be dealt with at one time, so prioritizing of time is a little bit of a challenge.

> “**As COO, I know the systems, I know how the process works,** and it's amazing how that little title change can change people's perspective.

The CIO's role has evolved to include more business responsibilities, and other executive positions include technology responsibilities. So what does the future of the CIO role look like? I've been in other companies where you have people in management who fancy themselves as technologists, and they're the ones bringing the technology and the solutions into the company and the CIO is more of an executor — he's not developing strategy. I hated that.

If you're going to bring in, [for example], 10 solutions with 10 databases, you're going to end up with problems. Business people can't always see that. And as CIO, you end up getting blamed for the problems. CIOs get fired for that.

On the other hand, you have CIOs who are very business-savvy and understand the problems and go off and solve them in the best way. Here at this company, no technology happens until IT is involved, and all deals are negotiated by IT. I'm pretty adamant that IT needs to own this because there's this whole architecture component and cost component. At the end of the day, someone has to make sure everything under the hood works. That's why we have technology specialists.

You recently participated in a panel discussion about analytics. What are you doing that involves big data? There's a lot of data to harvest to figure out your customer, so I think there are huge opportunities. I can't say we've done huge things, but we've gone down the path.

You have to put in the infrastructure, and you need to figure out how to deal with structured and unstructured data. We put in Vertica, a columnar database, so we made sure we could handle large volumes of data. And we were able to increase performance by 50 to 100 times, so we were able to look at analytics.

Now we're able to run queries that used to take a day — if they even ran, if they didn't fail — now we can do these in minutes. Right now, we're doing market-basket analysis, looking in detail at what people are buying online together and in the store together, and using analytics, we actually make suggestions.

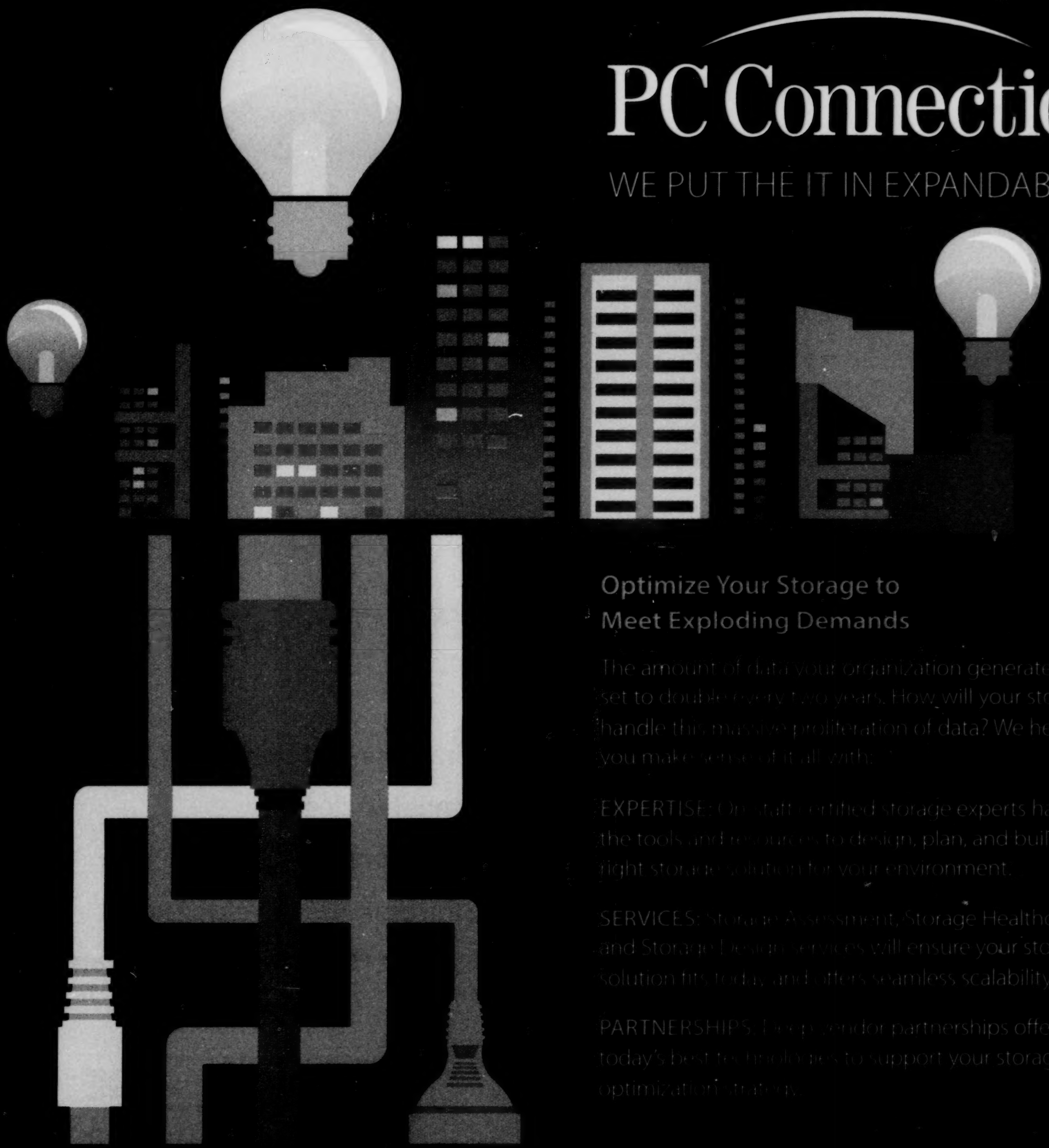
You've also talked about a generational change coming. What do you see? There's going to be a revolution in retail when the next generation comes in. They grew up with smartphones and technology. The guys running it now are in their 50s and they're not tech-savvy. But when the next generation comes in, I think you're going to have huge, huge changes. Right now, they say omnichannel: It's mobile devices, computers and in-store. I think they're all going to get merged together.

We're experimenting with some technology. We put some sensors in the store, so when I walk in, [the system] might not know that it's Mike Relich, but it knows my phone and it can see how many times I've been in the store and my path in the store.

And now it can track were you go. Do you go first to the sales rack, and how long do you spend in accessories versus denim? Right now, I know how long they stay and their browsing patterns. But if I get you to opt in on our mobile app, now I know it's you. So the next time I can pop you up on an iPad, and all the history you have, and basically know you.

Think about it: In the store, especially during a busy time, you have to allocate resources. Now I can see this is Rachel. She spent $5,000 last year, and I know she's a denim buyer and I can show her denim. And Mike buys only watches, and I can market to him that much better. I can take that same data on the Web and change the landing page and change the entire browse and dynamically generate pages tailored to you.

— *Interview by* Computerworld *contributing writer* **Mary K. Pratt** *(marykpratt@verizon.net)*



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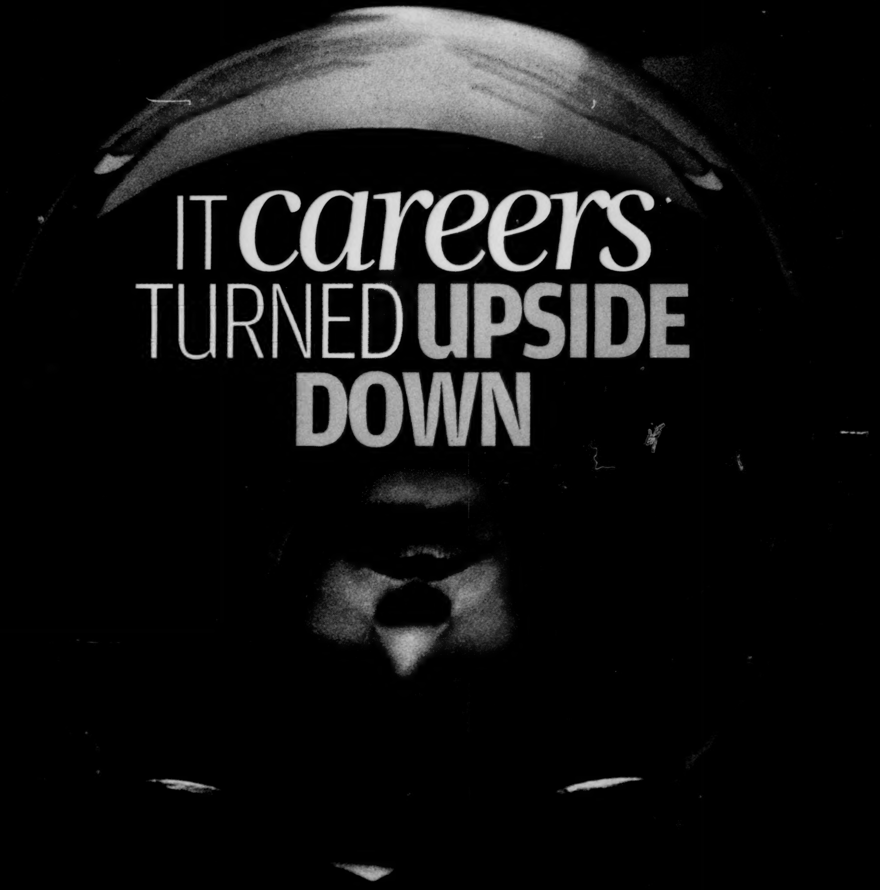
IT careers TURNED UPSIDE DOWN



SPECIAL REPORT

Most IT professionals we surveyed say they don't aspire to the CIO post. Surprised? Turns out, they're looking instead to a wide array of senior business positions that are tightly connected to technology. Another surprising trend: The help desk is hot, with hiring on the rise. And when we asked about the ongoing need to keep skills fresh, nearly two-thirds of our respondents reported shelling out their own money to get training. Need help making sense of it all? Read on for practical advice for every level.

WHY *few* WANT TO BE THE CIO ANYMORE

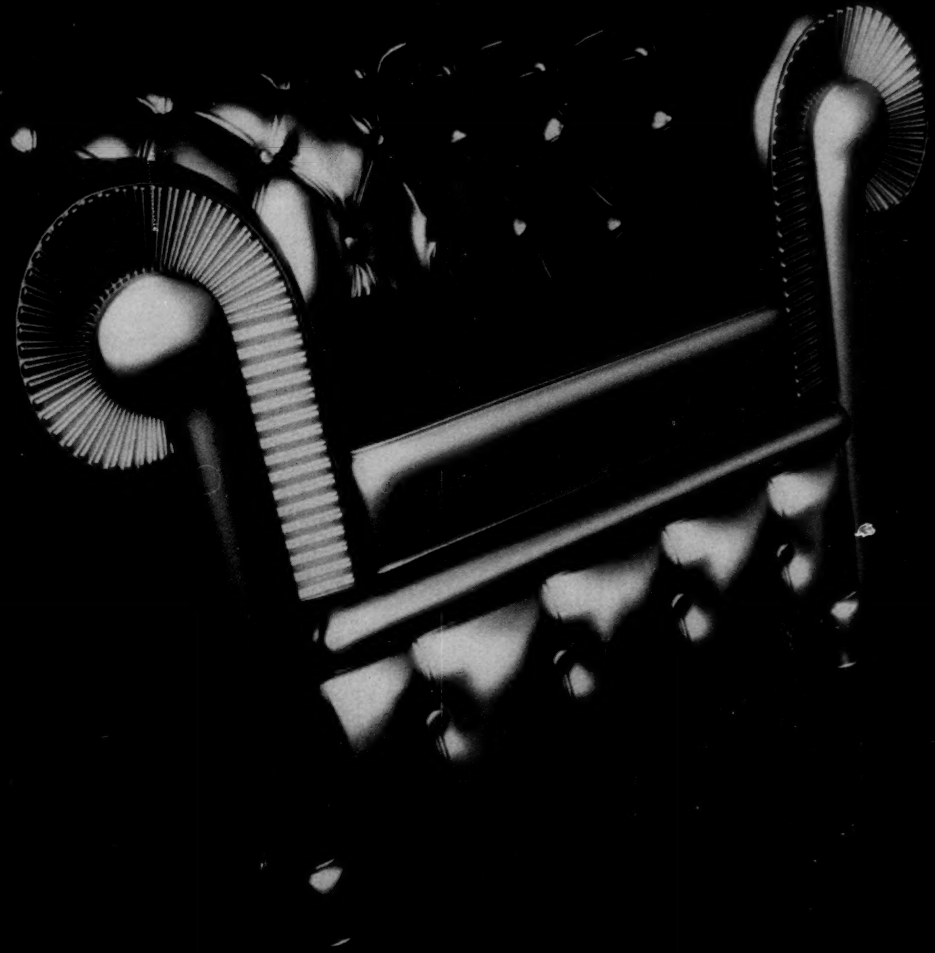
More than half of the respondents to our survey say they don't aspire to be a CIO. Here's why politics, pay and a lack of prestige can sink CIO aspirations.

BY JULIA KING

STEPHANIE JURENKA started out in IT as a systems administrator more than 10 years ago. Today, she's an IT manager with absolutely zero interest in a CIO role.

"Being a CIO doesn't offer the opportunity to do the cool stuff that IT people like so much to do. It's about meetings and budgets and politics," says Jurenka, who works at Westway Group, a bulk liquid storage company in New Orleans.

THINKSTOCK



A PROBLEM OF PERCEPTION?

"IF IT PEOPLE aren't identifying with the CIO title, you have to wonder if it's because they've got some old interpretation of the CIO role," says Bill Mayo, a senior director of IT at Biogen Idec, who does indeed have aspirations to one day be a CIO.

As Mayo sees it, the CIO job has changed radically in the past decade, making it more, not less, attractive.

"It used to be that the CIO was kind of the lead geek, then the guy who translated geek speak to business speak, then the person struggling to get a seat at the table. Now, with so much focus on innovation, the CIO has emerged as the guy who is at the table causing some discomfort because he's pushing people to try new things," Mayo says. "Everything is changing, and to some extent, the role of CIO has become much richer and much more exciting. The CIO is in a position to agitate for change."

At Biogen Idec, for example, Mayo recalls that former CIO Ray Pawlicki spent more than a year as the interim head of human resources, where his chief responsibility was defining the biotech company's culture and determining "how we would innovate and how we would work as a company."

At Idaho National Laboratory in Idaho Falls, the CIO role also has changed and expanded, according to Troy Hiltbrand, enterprise architect in the Office of the CIO. For starters, the lab's CIO, who previously reported to the CFO, now is a peer to the CFO and reports to the laboratory director.

"The role also has shifted away from technology and focusing on how to get operations to an optimal level and toward looking at how we're leveraging technology and information to enable the business," Hiltbrand says.

The IT department has also been renamed Information Management and is increasingly focused on acquiring off-the-shelf software and services, lessening the need for highly skilled technology professionals on staff.

"We're seeing a shift from people who are hands-on technologists to those who can manage contracts and establish a service level and then manage a vendor to accomplish those directives," Hiltbrand says.

To reflect these and other changes, Hiltbrand says lab officials are working on redefining job titles and laying out clear career paths for staffers "so we can set expectations as to what's needed and to the next step they should take."

Among other things, the revamped job descriptions will include information about the audience the people in each role can expect to engage with, the technical skills they will need and a description of how they will engage [illegible] the Department of Energy laboratory complex, Hiltbrand says.

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Dan Allen, an IT manager at Delta Children's Products in New York, feels the same way. With close to 20 years in the profession, he has no desire to be a CIO either.

"The IT management positions I pursue are almost all hands-on positions," Allen says. "Yes, you have to take advantage of the opportunities given to you, but I continue to work on my [technical] certifications because I want to be in an engineering position. The CIO role doesn't appeal to me. I discovered over the years that I prefer to be hands-on."

Jurenka and Allen aren't alone. In a *Computerworld* survey of 489 IT professionals conducted in August and September, 55% of the respondents said they don't aspire to a CIO post. In fact, only 32% of them said that they have set their caps for IT's top job. Politics, relatively low pay and a lack of prestige all register as deterrents.

Yet there's another reason for this shift in career thinking. Technology professionals are being recruited to work in marketing, logistics and other functions outside of IT as technology becomes more deeply embedded in virtually every aspect of the business. That trend is expanding the IT career path horizontally. Rather than one career ladder with CIO at the top rung, there are increasingly multiple career bridges across organizations.

"The digital business wave is bound to reignite interest in information and technology and to lure people into different areas of the business as information and technology increase their direct impact on revenue, markets and customers," says Diane Morello, an analyst at Gartner. "Information and technology are lifeblood for companies: No single department owns them."

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Barron says he believes IT professionals today are spurning the CIO role because of the comparatively low status that the title carries at most companies. "If people are going to work hard toward getting a C-level title, they want it to mean something," he says. "What a lot of people see is that CIOs don't wield either the power or authority commensurate to a C-level title."

Another big disincentive: "The politics are endless and there's not a lot of respect for the position," Barron says. "The C-suite is pretty apathetic about the CIO position. What they want is for systems to work and they want no drama out of IT."

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The politics and power struggles don't go unnoticed by the rank and file. Additionally, IT staffers say they can't help but notice how much time the CIO role requires. Many IT professionals, especially younger people, are unwilling to trade off having balanced work and home lives for the pursuit of IT's top spot.

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All of which makes for something of a stalemate. At the same time that so many technology professionals aspire to advance through tech-focused, hands-on roles, more and more of those roles are being handed off to service providers and contractors. Increasingly, the technology-related careers that remain at non-IT companies fall under a kind of hybrid role, which requires business and process acumen plus enough IT experience to understand how to use technology to advance the business.

The upside of this scenario is that talented technical professionals have a place to grow and thrive with service providers that are fully engaged with the latest technologies and their uses.

"There are more career paths into and out of IT than there used to be," says Markus Bierl, CIO at Franke Foodservice Systems in Nashville. "It's much more important that you know and understand the business. I have people in my organization who came from the business side and I have IT people who transferred back to a business role. An IT career path is no longer a straight career path," he says.

CIOs from healthcare, financial services and manufacturing tell a similar story. Fast-changing business processes, the need for speed, consumers' appetites for customization, and ever-mounting government and industry regulation are all working to complicate day-to-day business. What they need internally are people in IT with business knowledge and deep industry expertise.

"SaaS and the consumerization of IT and cloud services are driving a clear wedge between the two branches of an IT career," says Bill Mayo, senior IT director at Biogen Idec, a biotech company in Weston, Mass. "We're taking business-facing IT people and switching them to directly reporting to the business with a dotted line reporting back to IT."

The upshot is that the most technical of the techies will likely be pursuing their IT careers with service providers, while more business-oriented IT professionals will remain in IT departments to manage contractors and oversee service provider agreements or move into hybrid roles outside of IT.

"Ultimately, it's the delivery of services that is being commoditized," says Joe Donnici, vice president of core IT at Quintiles, a clinical research company in Raleigh-Durham, N.C.

"You are starting to see a thinning out of database administrators and other administrative resources because more and more companies are supplying managed services to companies," Donnici says. "Some of the specialized positions in applications, such as PeopleSoft, also begin to go away because there are SaaS providers. The macro trend is for techie people to go to SaaS and cloud companies and to internally retain more business roles."

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An IT career still comes down to pursuing either a technical or managerial track, says Bob Dulski, director of IT at the Chicago Zoological Society. And that carries through to the CIO role. "It's not that important anymore that they know about VMware or cloud computing," he says. "The CIO is a different kind of person." ◆

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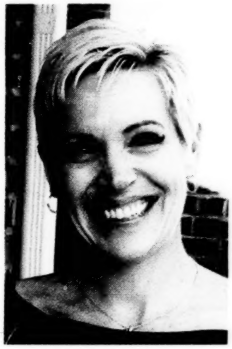
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THORNTON A. MAY

IT for the Whole Brain and The Whole Organization

> Focus on integrating value-creating IT behaviors into every nook and cranny.

WHAT WILL REALLY TURN IT careers upside down in 2014 is integrating value-creating IT behaviors into every nook and cranny of the enterprise. It sounds simple until one remembers that the history of our industry and profession is one of separation.

One such separation that will disappear is the distinction between the technology itself and the behavior that surrounds its deployment and use. In fact, future IT careers will be more behavioral than they are technological.

C.P. Snow, British scientist and public intellectual, told us that Western society was irreconcilably split between scientists and poets. Science writers told generations of decision-makers that the human brain is divided into halves, and we were either "left-brained" (logical) or "right-brained" (creative). The curriculum at most universities continues to be dysfunctionally microparsed into ever-narrowing subdisciplines and sub-subdisciplines. The structure at many organizations separates those who work in IT from other employees in the enterprise. As an empirical futurist who architects creative spaces, I can tell you that all this separation destroys value.

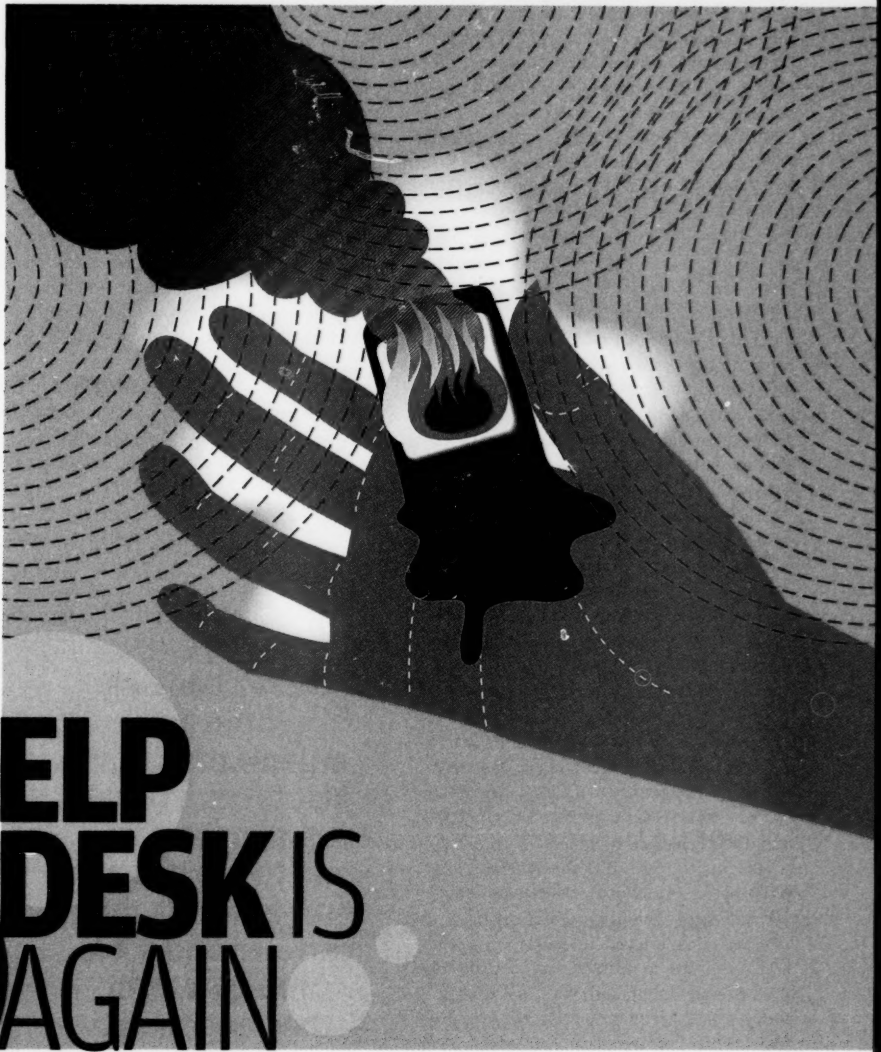
One can't help but be amazed at how digitized every aspect of our lives has become. Every part of human existence has been impacted by IT. Bill Seibel, über-entrepreneur, CEO and founder of Mobiquity, delights audiences with his humorous description of how the various bits of mobile functionality (i.e., accelerometer, clock and microphone) have been packaged to create a new application category — sexual performance monitoring apps. Technology is everywhere and every*when*.

In the workplace, there is no job or task that doesn't involve IT. Many executives seem to forget this. At a recent executive program at Florida State College at Jacksonville, one of the early CIOs at Cleveland-based Progressive Insurance described the exercise he and his team went through to analyze the impact of de-automating the business (i.e., doing business without IT). To process the volume of work without IT would entail renting out the old Richfield Coliseum, filling it with 25,000 people armed with typewriters and running three shifts. The value created by IT was creatively and unambiguously demonstrated.

I think we can all agree that in the modern workplace, everyone works with IT. What needs to be done is to acknowledge that from this day forward, everyone works *in* IT. Don Marinelli, beloved drama professor and co-founder with Randy Pausch ("The Last Lecture") of the Entertainment Technology Center at Carnegie Mellon University, puts to rest the belief that people are either technical or artistic. The brilliant young people at the ETC are both. We have to stress and stress again that facility with technology (value-creating behavior) is a necessary skill for everyone. Job one for those who work in IT will be to create that capability in those who don't work in IT.

Historically, popular media has portrayed the separateness of IT. Who can forget the eminently loathable programmer in the first *Jurassic Park*? While contemporary renditions of IT folk are more sympathetic (e.g., the computer tech in *Almost Human*, the Fox police show set in 2048), stereotypes still prevail. Even in an imaginary future where anything can happen, IT is still relegated to the role of turning machines on and missing the real action. If you focus on integrating value-creating IT behaviors into every nook and cranny of the enterprise, the future will be bright. ◆

Thornton A. May is author of *The New Know: Innovation Powered by Analytics* and executive director of the IT Leadership Academy at Florida State College in Jacksonville. You can contact him at thorntonamay@aol.com or follow him on Twitter (@deanitla).



THE HELP DESK IS hot AGAIN

If you thought the traditional help desk would be outsourced, automated or altogether shut down, think again. **Hiring for the help desk is hot.**

BY STACY COLLETT

IF YOU'RE LOOKING for an exciting IT job with the city of Staunton, Va. — the hottest action is at the help desk.

"That's actually where most of the work is right now," says CTO Kurt Plowman. "Police, fire, sanitation, water, recreation — they've all got some sort of technology involved in almost every job," and most of that technology is mobile, which requires even more assistance. Workers who put in water lines, for instance, use GPS devices to locate manholes. "That stuff we didn't have 10 years ago."

The shift has prompted the city to add another help desk employee to its five-person IT staff to

GETTY IMAGES

help field questions from about 400 municipal workers. "With the consumerization of IT, most of the action right now is at the user level, rather than back in the server room or networks," Plowman adds. "Our help desk is now our biggest interface with our user community."

Make no mistake: Hiring for the help desk is hot again. In a *Computerworld* survey of 489 IT executives conducted in August and September, 34% of the respondents said that they expect to hire more help desk staffers in the next 12 months.

The help desk was even listed among the top four "hot jobs" for the coming year in a survey by HR consulting firm Mercer and IT research firm Gartner.

"We see that, traditionally, the help desk was very much focused on pretty tactical types of items" such as passwords and software glitches, says Bruce Barge, a Mercer partner. "Now the help desk is starting to get involved with a wider range of activities, such as mobile and apps, that had previously not been automated. Now help desk professionals will have to have a broader skill set or more intelligent support systems to guide them in solving customers' problems."

The help desk now provides competitive advantage for many organizations, as well as the chance to bring "high touch" back to high tech. Today the help desk also serves as a vital liaison between employees' mobile technologies and the networks, servers and applications that support them.

What's more, larger pools of seasoned professionals are seeking help desk positions, IT executives say. They're finding that the help desk can utilize their wealth of expertise while also giving them opportunities to escape the data center, interact with people and directly help the business on a daily basis.

It's all part of a shift in the help desk philosophy — from order-taker to problem-solver. "We're changing from an organization that just takes a ticket and passes it on, to a group of professionals that can own and solve problems right then and there," says David Stevens, CIO of Maricopa County, Ariz. He plans to add four new staffers in 2014, raising the county's help desk ranks by 20%. "You could make that a career and feel like you're making a major impact on the organization."

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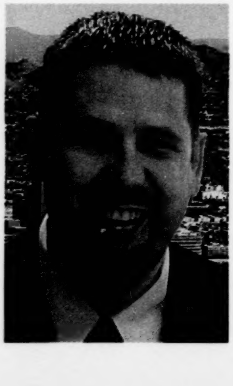

So what's driving the change? Help desk professionals and IT experts say the shift has been years in the making.

Driving Competitive Advantage

Help desk expertise is a competitive advantage for KMD Enterprises, a Seattle-based real-time medical billing company. Billers, mostly contract employees around the country, serve as the help desk staff. They are in constant communication with clients who run doctor's offices, answering questions and training people to use KMD's server network and software.

When a biller gets a question, he evaluates the issue and decides whether he can handle it or needs to pass it on to the technical services group.

"Everything we do is 100% live and instantaneous, and that's the service that we provide. Without it, we would be like everybody else," says Rowland Dennis, CTO and CIO at Stat Medical Technologies Group, part of KMD. "Changes are made very fast — there's not more than a two-minute delay at the longest. We do not fill out a service ticket and then somebody calls you back in 30 minutes."

The company made two help desk hires in October, and Dennis says he would like to double the number of billers/help desk staffers in 2014 to match the doubling of business in the past year. Those new hires will be seasoned billing veterans with at least 10 years of experience, he notes, adding that turnover on the help desk is very low because the contractors are paid for performance.

Bringing Back the Human Touch

After years of outsourcing the help desk or replacing staff with automated voice response systems, many companies are realizing the value of giving customers more personalized attention.

Brailsford & Dunlavey brought the help desk back under its roof in February after outsourcing it for about 18 months.

"We determined that the model just didn't fit our corporate culture," says Chris McCay, director of IT at the Washington-based program and project management firm. "We're a midsize business, but we have a real boutique flavor in the way we try to present ourselves to clients. For me to not present the help desk in that same way to our internal employees, it was creating a real corporate disconnect. So we went back to an in-house model."

McCay hired one new help desk worker, but says he will expand the staff if the business sees the same dramatic growth it experienced in 2012 and 2013 when the firm added 30 employees.

"Help desk is becoming more personable rather than the endless interactive voice response systems — that makes a huge difference to the customer base," says Rami ElGawly, technical architect at eClinicalWorks, an electronic medical records (EMR) software company in Westborough, Mass. In 2014, the company plans to add more experienced Tier 1 help desk staffers who already have a working knowledge of the EMR product.

Demand for help desk and training staff is definitely on the rise in the healthcare sector, according to David Foote, CEO of IT workforce research firm Foote Partners in Vero Beach, Fla. Healthcare facilities are still working to comply with a federal mandate to deploy EMR systems. That's driving up pay for trainers and help desk people, "which usually means demand is growing faster than supply, particularly over the last year," Foote says.

"I think that's why the help desk has become more of a place where people can stay, because they're finding that they are gaining importance for the company," he adds. "Before, [help desk staffers] were relegated to the bottom of the line, where people who weren't able to get to the [interactive voice response system] were routed," and they often ended up helping irate customers who had been on the line for 10 minutes.

> **Not that I don't like technology brethren — but sometimes being with techies all day long can wear you out.**
>
> **JENNIFER ASHER,** HELP DESK COORDINATOR, MARICOPA COUNTY, ARIZ.

Career vs. Steppingstone

Several Maricopa County agencies are operating around the clock while trying to deploy new technologies. So Stevens plans to hire more help desk staffers to create a third shift of experienced professionals for after-hours calls, such as those from the health services unit at the department of corrections, which recently added EMR software.

"The help desk used to simply be a clearinghouse where they would take in the phone call and ship it out to somebody else to solve the problem. Now we want to embrace first-call resolution, so the skills they have to have are more substantive than in the past," Stevens says. "They must be able to solve technical problems without going to Tier 2 or 3 support, which is what the trend used to be. They're coming in and having the opportunity to own more issues, expand their technical knowledge — and it becomes more of a career than a steppingstone."

Stevens has already hired several people who have been in the workforce for years and have decided to make the help desk their new home.

For example, Maricopa's new customer service manager, Steve Szoradi, has a background in telecommunications but has worked in customer service for 22 years — most recently at a law firm before joining Maricopa County in October.

"I know enough technology to be dangerous, but my skill set is working with people," Szoradi explains. "I think this is where I fit in. I can take and develop people and build teams. I am right where I wanted to be."

Another hire is help desk coordinator Jennifer Asher, who worked on the help desk when she started her IT career 20 years ago, then transitioned to being a network administrator and an engineer before ultimately returning to her help desk roots.

"I enjoy working with people — feeling their anxiety about wanting to get something done" and being able to solve their problems, she says. "Here you get to be an essential part of making the county run. It feels really good. Not that I don't like technology brethren — but sometimes being with techies all day long can wear you out."

Todd Fuller has been a network administrator for seven years at produce grower and distributor Allan Brothers in Naches, Wash. About half of his workday is often spent in his dual role as a help desk troubleshooter. He appreciates the chance to leave his computer-hardware-strewn office for a while, and "getting a smile on somebody's face after you've fixed their problem," he says. "I get kudos all the time — like, 'You're Superman.'"

Plowman says he expects the help desk to become a sought-after destination for IT pros looking to become proficient in hot new technologies.

For the Staunton, Va., IT department, the help desk is "really where the cooler, more exciting stuff is right now," Plowman says. "We just put in a new e-ticketing system for the police. That's something we push at the help desk folks. They have to understand it so they can fix it 24 hours a day. That's pretty new, cool technology that the help desk people got to do, not necessarily the network or server people."

The help desk is evolving into a customer service center. It's being elevated to a more important business role based on the information and feedback that help desk professionals can provide, says Maricopa County deputy CIO Sandip Dholakia, adding, "We're transforming it to a driver of improvements made to our systems and improvements made to resources available to customers." ◆

Collett *is a Computerworld contributing writer. You can contact her at stcollett@comcast.net.*

WHO'S RIGHT FOR TODAY'S HELP DESK?

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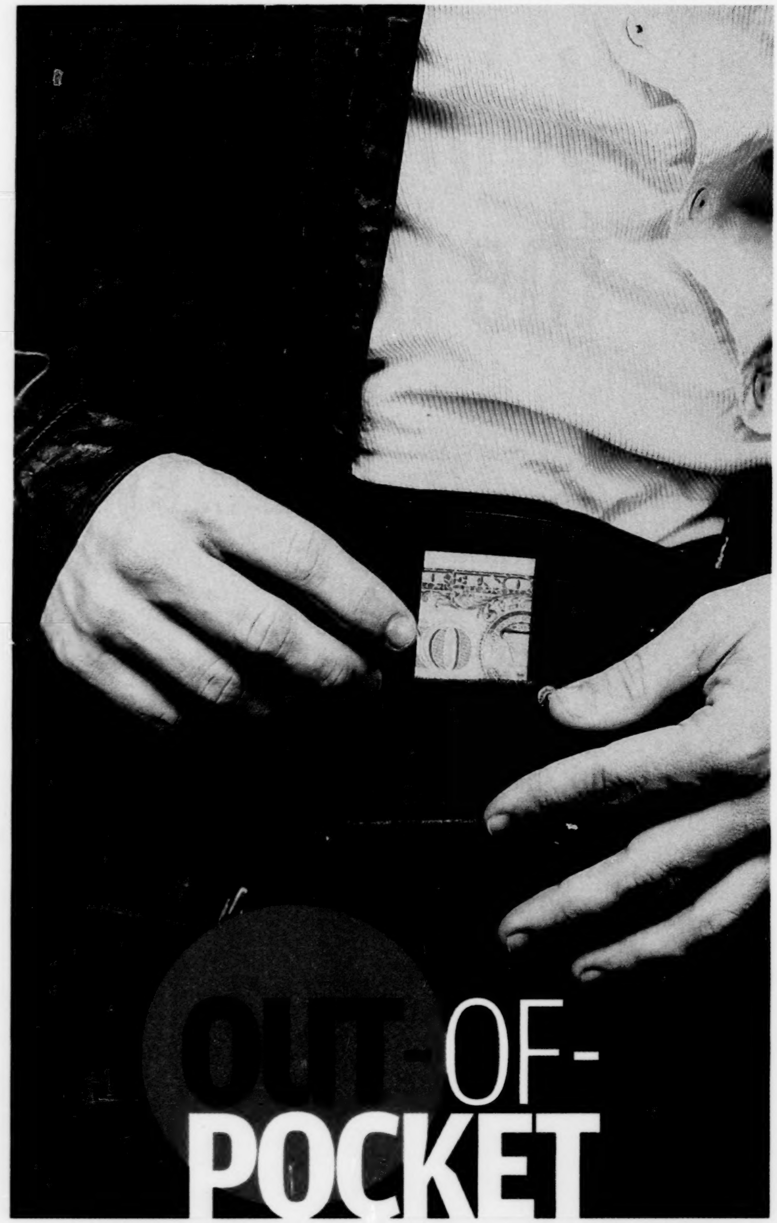


OUT-OF-POCKET *expense*

IT spending is kicking up again, but training budgets have been slow to recover. **Many IT professionals are taking matters into their own hands.**

BY MARY K. PRATT

LINDA BUBBERS got a tip early in her career: Become a Certified Netware Administrator and earn a transfer to a better team.

Bubbers, a Cobol programmer at the time, took the advice. She paid for the CNA course and test herself, banking that the certification would indeed help her get ahead.

It did. And so for the past 20 years Bubbers has followed the same strategy for career success, earning multiple certifications through studies she funds out of her own pocket. She estimates that her ongoing education, which includes structured classes, conferences and books, has cost her at least $14,000. She spent another

THINKSTOCK

$9,000 earning an MBA from Webster University.

"I just kept doing it on my own because I wanted to advance, but also this is what IT people need to do to stay employed. Everything changes so fast, you can't not stay in the education stream," says Bubbers, now a senior network administrator at Craig Technologies, an IT and engineering services provider in Cape Canaveral, Fla.

Bubbers is hardly alone in her approach. IT spending may be on the rise, but training budgets aren't increasing at the same pace. That has left many IT professionals shouldering more of their own training costs as they seek to keep up with the rapidly changing technology landscape.

In fact, in a *Computerworld* survey of 489 IT professionals conducted in August and September, 62% of the respondents reported that they have paid for training out of their own pockets in order to secure their careers. They listed "keeping skills up to date/being valuable to employer" and "finding an appropriate new position for my skill set" as their two biggest career concerns. And 78% said education has been either very important or important for their careers.

They're on the right track, says Jack Cullen, president of Modis, a global provider of IT staffing services.

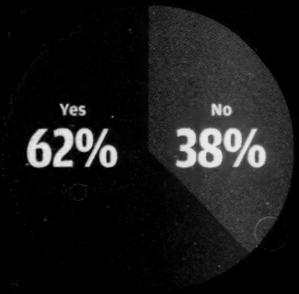
"IT workers are right when they say this is an expectation, because given what IT jobs pay, the expectations from employers are high," Cullen says.

He adds: "It's a very competitive field, and this is what you have to do to stay competitive."

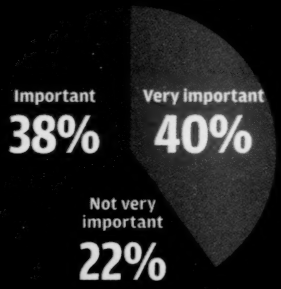
That's not to suggest that an IT professional has to get every certification under the sun to stay employed or land a big promotion. But, he says, the plum jobs and assignments do indeed go to those who have the extra education on their résumés.

TRAINING TRUMPS

Have you paid for outside training from your own pocket to secure your IT career?



How important has education been in your career (degrees, certifications and training)?



What's your biggest concern about your career?

1. Keeping skills up to date/being valuable to employer
2. Finding an appropriate new position for my skill set

SOURCE: COMPUTERWORLD SURVEY OF 489 IT PROFESSIONALS, AUGUST AND SEPTEMBER 2013

Training as Table Stakes

IT is hardly the only field with such high expectations for ongoing training. As Cullen points out, people in many other lines of work face similar pressure to continually seek professional development opportunities. In fact, some professionals, such as CPAs, lawyers and medical personnel, are required to take a set number of hours of training if they want to retain their licenses or rights to practice.

"If you really think about it, IT is playing catch-up to what other professions have been doing for years," Cullen says.

Some IT workers approach training the same way people in other professions do — with the sense that it's essential to their careers.

Take Chante Nelson, an information systems analyst for Florida's Broward County. She started in IT soon after joining the U.S. Navy in 2000 and remained in the field after receiving an honorable discharge in 2008.

She earned a bachelor's degree in systems security from the University of Phoenix in 2011 and a master's degree in information systems, also from the University of Phoenix, in August. She paid the nearly $50,000 tuition bill using her own money, loans and grants.

In addition, Nelson has paid for a number of seminars and training courses covering everything from Microsoft products to VMware. And she covered the costs for programs that helped her earn A+, Security+ and Network+ certifications as well as the Microsoft Certified Solutions Expert designation. She figures she spends eight to 20 hours a month in some sort of training program.

Nelson picks courses based on what she knows her employer will need as well as what's hot in the field.

"You weed it down a little bit to what the company needs and then you ask if it's going to be beneficial for me for the future. You don't just want to do it for the company and have skills that won't be useful anywhere else," she says.

That approach has helped her get ahead. Nelson has held three jobs at three different organizations since 2008, with each position a step up from the prior one.

However, she questions whether such efforts will continue to stand out on her résumé. She says employers seem to expect IT staffers to pursue ongoing education just to stay employed.

"I think it's becoming more so that you have to have it, it's not even putting you over the edge to know all these things," she says. She points to a colleague who was told by a potential boss that even though a job posting listed a number of certifications as "preferred," he really required them.

The courses that are most in demand seem to correspond with the most sought-after skill sets, with the popular training topics depending on the individual's specialty, according to

> **I just kept doing it on my own because I wanted to advance, but also this is what IT people need to do to stay employed. Everything changes so fast, you can't not stay in the education stream.**
>
> **LINDA BUBBERS,** SENIOR NETWORK ADMINISTRATOR, CRAIG TECHNOLOGIES

both IT workers and those who hire them. Networking pros gravitate toward Cisco certifications. Project managers seek out courses that can help them earn the Project Management Professional designation. Developers are trying to sharpen their mobile app development skills. Those looking to move into management are taking business courses and enrolling in MBA programs.

"You can almost break it down by position," says Joseph Kotlinski, a partner and manager in IT search at WinterWyman, a Waltham, Mass.-based recruitment firm.

Kotlinski says system administrators are signing up for training sessions in Linux and Windows administration and in Perl, PHP, Python and Ruby on Rails. People who know .Net and Java want to learn about mobile and open-source technologies. Database folks want to learn more about SQL, MySQL, Hadoop, Cassandra, and big data in general. And everyone wants to learn about cloud computing.

Kotlinski agrees that IT professionals need to keep up with their training if they want to keep their jobs.

"The business expects the technical people to really know what's going on out there," he says. "There are a lot of people in companies who are gadget people, and you don't want those people to know more than the technology people, so the IT people [train] just to stay current, but also so they can provide services and guidance to those gadget people."

Many pay for training so they can check off the certifications and skills that job postings list as requirements, just to make it past the screening process.

On the other hand, Kotlinski says, some techies sign up for extra training simply because they're curious.

"They want to know what's out there. If they hear someone mention a new technology, they want to know what it is," he says.

Training Potpourri

Kotlinski and others say they're also seeing new trends in how and where IT workers seek training. Although many corporate development budgets remain tight, companies still pay for some training. They might not be sending large numbers of staffers to big conferences and seminars, Kotlinski says, but they continue to contract with vendors for on-the-job training or encourage mentoring and other work-based learning.

IT workers may not see all of those learning opportunities as training. And they might not realize that their companies are still willing to pay for training. IT leaders say many employers cover training costs, even for courses picked by individual workers, as long as a worker can show how the training benefits the company. Still, they acknowledge, training dollars aren't flowing

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as freely as they once were, and that leaves plenty of costs to individual employees.

And that scenario has serious drawbacks, says Joseph Young, IT director at OK International, a Garden Grove, Calif.-based manufacturer of bench tools, equipment and related products.

Young says he pays for the training he thinks his six-member IT team needs so that he — and therefore his organization — can stay current. "I just make sure they can quantify how their training will help the company reach strategic goals," he says, noting that he supports a variety of training opportunities, from conferences to mentoring.

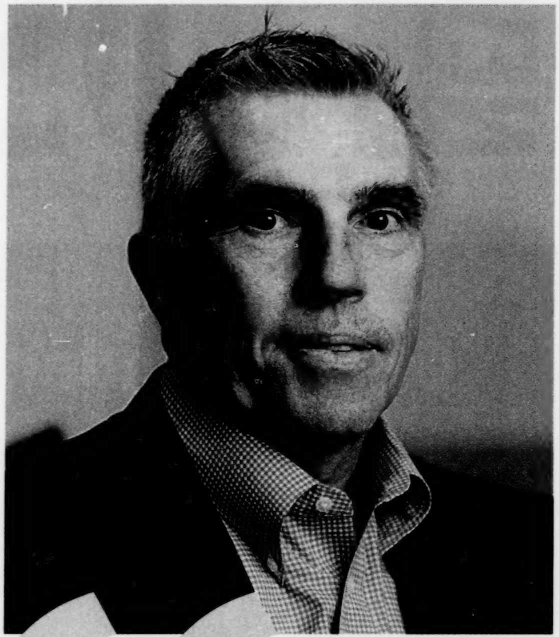
He says IT organizations that don't pay for training lose their competitive edge. "There's a common denominator I find with underperforming IT organizations: They don't have the investment in training," he says.

As a result, many techies must find ways to keep costs in check as they pay for more and more of their ongoing education. They seek out webinars and low-cost or free online learning opportunities, including massive open online courses, or MOOCs.

Ali O. Sabbah is a case in point. He's a senior desktop analyst at a California law firm. He's studying for a bachelor's degree in business law and finance at California State University, and he takes courses in networking, Cisco certification and emerging technologies. He signs up for vendor-led training at his company, classes at an area community college and tutorials online.

He acknowledges that it's an eclectic mix, but he says it's delivering the knowledge he needs to earn his degree and the certifications he believes he'll need to eventually launch his own IT services firm. "There's enough out there," he says, "that I can get what I need to get ahead." ◆

Pratt *is a* Computerworld *contributing writer in Waltham, Mass. Contact her at marykpratt@verizon.net.*



It's a very competitive field, and this is what you have to do to stay competitive.

JACK CULLEN, PRESIDENT, MODIS

TIE TRAINING TO COMPANY, CAREER NEEDS

JOSEPH KOTLINSKI, a partner and manager at recruitment firm WinterWyman, talks to a lot of IT workers and he notes a bit of "randomness" in the training opportunities they pursue.

They fill in gaps in their knowledge, which is good, but they're not necessarily gaining the knowledge they need to get ahead. For example, someone might take a class on big data, Linux or a new programming language, pick up the fundamentals and then move on to another subject.

John Bates, a Mansfield, Mass.-based career coach, says people would do better if they first assessed what expertise they have and then determined where they want to go and what skills they need to get there.

"It's important for technology people to be constantly aware of what skills are in demand and how they line up with that," he says.

Ralph Roberto, president of Keystone Partners, a career management services firm, says, "If you have a career plan and then get the education to support it, it's a much more effective way to go."

He recommends taking the following steps to formulate a coherent professional development strategy.

Take stock. What are your skills, experiences, attitudes? What motivates you? "Take an unvarnished look at yourself," Roberto says, adding that there are tools online to help with this step.

Form a vision. "You should have a point on the horizon where you want to go," he says, noting that in IT, that can be pretty granular. Articulate what roles you want to have several years down the road, in which organizations using what technology platforms. Look at job postings to see what skills and job experiences are required.

Develop a strategy. Identify what skills and experiences you have and what you're lacking to figure out what types of training or education you need to move forward.

Execute. "Now you have to go do something. You actually have to go off and get that education, work with your manager to get those stretch assignments," Roberto says, adding that "sometimes you even have to change jobs."

MARY K. PRATT

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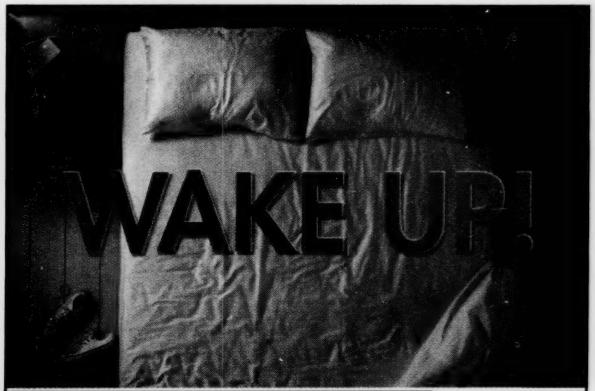

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Congratulations, You're Your Own Skills Manager

> For those who accept the burden of thinking like a free agent, the new model represents opportunity.

THIS YEAR'S *Computerworld* reader survey on careers topics indicates that we in IT have turned a corner. And, overall, the new direction is good. With nearly two-thirds of the respondents reporting that they paid for training out of their own pockets, we see that IT has accepted, at least to some degree, the new nature of employment relationships.

There are a few conclusions to be drawn here. First, we have given up relying on our employers to see to it that we develop our talents and skills.

It has become abundantly clear over the past decade that there is little difference between being a contractor and being an employee. In many parts of the world, and particularly in the U.S., we have made a collective decision (with our votes) that we want to be a society with high labor mobility, both geographically and occupationally. We make it easy to hire and fire people. Whether that's a good thing or not will be debated for years, but our behavior indicates that we have accepted this as fact.

We no longer expect our employers to plan our careers or deliver training. And those who insist that it's an employer's responsibility to take on those tasks place their own futures in jeopardy, relinquishing control of their development to their managers, who can make decisions on a whim.

Another conclusion: We can demand pay for the skills we bring to the job.

In the old model, we accepted consistent wages in exchange for job stability. If your employer paid for training to make you more valuable, you didn't expect to get an instant raise.

For those who accept the idea of thinking like a free agent, the new model represents opportunity. With security gone and individuals bearing the burden of skills development, we can demand wages that represent a return on our investments — if we invest in skills for which demand exceeds supply. The employment relationship is now more about market conditions and less about hierarchy.

And in some ways, it may be better for all of us, because when it comes to training, the old way didn't work very well.

And there's more good news. The new nature of employment relationships means that we will learn more.

Back when I managed a group of 100 people, I realized that I could pay people to attend training sessions, but I couldn't pay them to *learn*. When they took classes, they saw it as doing me a favor rather than investing in their own careers.

When I shifted to a shared responsibility model, things improved. I agreed to pay for tuition, but employees had to attend classes on their own time. After that, they stopped thinking of training as a perk and started considering it a career investment. Everyone was better aligned with business goals. They asked to go only to training classes that they cared about. And they learned much more.

The other part of the deal was that when people demonstrated that their new skills resulted in value for the organization, I would acknowledge that new value with a raise. In other words, we paid people for value delivered rather than for learning, and everyone was happier.

Now it looks like the decade-long standoff is over and that we've accepted training as a personal investment rather than an employer obligation. While we may embrace this with mixed feelings, in the end, we may well discover that we like it this way a lot better. ◆

Paul Glen, CEO of Leading Geeks, is devoted to clarifying the murky world of human emotion for people who gravitate toward concrete thinking. His newest book is *8 Steps to Restoring Client Trust: A Professional's Guide to Managing Client Conflict*. You can contact him at info@leadinggeeks.com.

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TRUE TALES OF IT LIFE AS TOLD TO SHARKY

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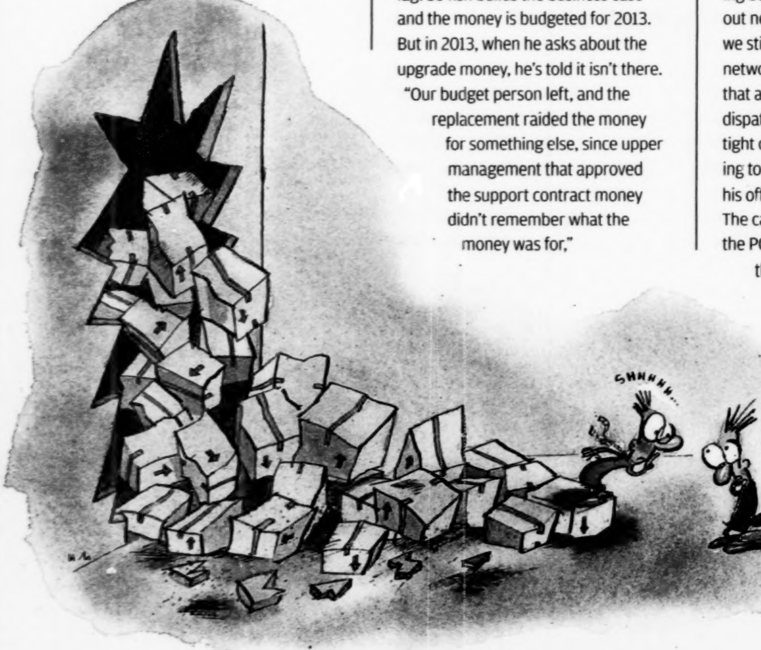
And Why Would IT Need to Know?

Distribution company's 30 warehouses are spread across the country, and this IT manager pilot fish is responsible for all of them. "I got a call from one of the sites saying that several of the IP phones and terminals in the office were not working and hadn't for several days," says fish. He asks some questions and learns that a full pallet of heavy material had accidentally gone crashing down into the office space. "Luckily nobody was hurt," he says, "but the Cat-5 wiring was not so lucky. When I asked our operations director why nobody had let me know about this little mishap earlier, he said that knowledge was on a 'need-to-know' basis."



HAL MAYFORTH

Best-Laid Plans

Back in 2010, state agency faces budget cuts, so the support contract for a critical commercial application has to lapse. But this pilot fish knows it will take three years to get it reinstated in time to upgrade from Windows XP before Microsoft pulls the plug on that OS – that's the standard budgeting lag. So fish builds the business case and the money is budgeted for 2013. But in 2013, when he asks about the upgrade money, he's told it isn't there. "Our budget person left, and the replacement raided the money for something else, since upper management that approved the support contract money didn't remember what the money was for," says fish. "So after trying to prepare ahead of time for a smooth transition, I'm now faced with a crisis where it's my responsibility to contact the vendor to smooth things over and to try to get a pricing break while at the same time trying – again – to justify to upper management the funds for what is now an emergency expenditure."

Munch, Munch

Pilot fish is co-managing a call center for a university when he answers a call from one distraught professor. "He claimed he couldn't get to his research on the local servers," says fish. "We discovered he couldn't ping the gateway either, confirming a network problem. After trying all the usual troubleshooting, such as checking both ends of the cable, checking out network settings and rebooting, we still couldn't get a link light on the network interface. We determined that an on-site tech would need to be dispatched. The professor was under a tight deadline, so I headed to his building to help him out. Once I arrived in his office, I quickly found the problem: The cable was indeed plugged into the PC and the wall, but the middle of the cable was missing. He also happened to be missing his pet iguana."

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OPINION

PRESTON GRALLA

Can Amazon Drones Save the Economy?

> As the government abandons funding research, companies like Google and Amazon can pick up the slack.

IT'S A TENET OF BUSINESS 101: Concentrate on your core business with laser-like focus, and cut out everything else. If you stray too far from that, the thinking goes, you're wasting time and money and you will inevitably be eaten by your competitors.

If that's the case, then Google and (to a lesser extent) Amazon are angling to become someone's lunch. Amazon has at times strayed from its primary business, with things like Amazon Web Services. Google is another matter, spending a substantial amount of money on research that is as far away as can be from its core business of powering Internet searches.

But I don't see either as being in danger of failing. Spending money on projects that may at times seem quixotic could very well fatten their bottom lines in the long run. More remarkably, it may ultimately help save the U.S. economy.

The reason? As the federal government abandons funding primary and applied research, the U.S. is in danger of falling behind the rest of the world in innovation. But when companies like Amazon and Google fund research for their own purposes, they help pick up the slack and spur gains throughout the economy.

Take Google's most recent venture, Calico, a healthcare-focused company that aims to, among other things, dramatically increase human longevity. Could anything be further from Google's core mission? No. And yet, Google is investing. Google co-founder and CEO Larry Page explained the decision this way to *Time* magazine: "In some industries, it takes 10 or 20 years to go from an idea to something being real. Healthcare is certainly one of those areas. Maybe we should shoot for the things that are really, really important so that 10 or 20 years from now we have those things done."

Even though Google is a private business, its research will redound throughout the economy. Calico will use big-data technology as part of its research, and its findings and techniques will likely spur other startups and associated businesses we can only imagine.

Then there's Google's research on self-driving cars. If successful, other companies will likely jump into the market, either to compete or to become part of a thriving, related ecosystem.

Amazon doesn't go quite as far afield as Google, but its big ambitions and research can similarly help not just the company, but the entire economy. Take Amazon's recent announcement that it was developing a fleet of drones to deliver packages. That will help jump-start a drone market now in its nascence. And that market will be substantial. The Association for Unmanned Vehicle Systems International estimates that drone-related companies will create more than 100,000 jobs in the U.S. by 2025, for a total economic benefit of $82 billion.

There was a time when the federal government embraced research as a central part of its role, and in doing so propelled innovation and the country's economic might. Al Gore may not have invented the Internet, but federal funding did, leading to explosive growth and innovation that will be felt for decades to come. But this is an era that disdains government and sees research as bureaucratic rot that needs to be cut.

Enter Google. And Amazon. And other tech companies. Their research needs to take up the slack as meat cleavers come down on federal research programs. Not only will it ultimately fatten their bottom lines, but it can help revive the U.S. economy as well. ◆

Preston Gralla is a *Computerworld.com* contributing editor and the author of more than 35 books, including *How the Internet Works* (Que, 2006).

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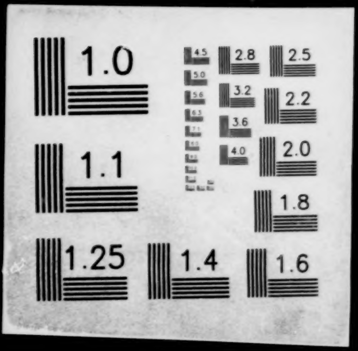
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